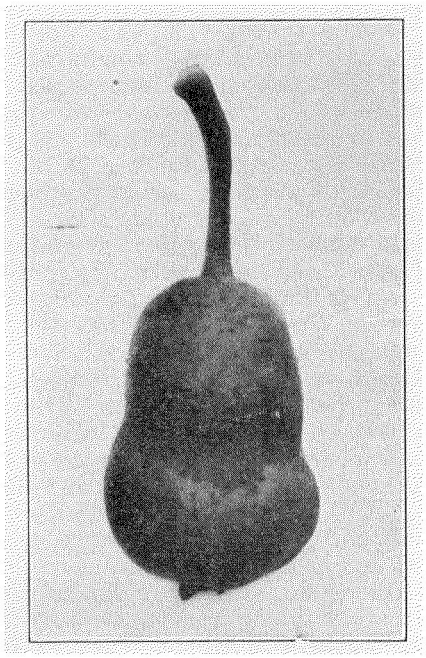
FROST RINGS.

By Prof. RALPH E. SMITH.

Through the courtesy of the editor of the Pacific Rural Press, Prof. E. J. Wickson, we are able to furnish the accompanying photograph, showing the effect of spring frosts in California upon fruit, particularly Bartlett pears. So far as known the cause of this particular blemish has not previously been determined. It is called "ring around the pear" and is of quite general occurrence during certain seasons. It is often the cause of considerable



The frost ring on the pear.

loss, as both the quality and selling price are affected. The blemish consists of a scabby ring of surface tissue, sometimes extending uniformly around the pear, or again occurring only on one side or part way around the fruit. The effect somewhat resembles that of pear scab; but it is quite distinct from the latter and is easily distinguished by one familiar with scab. The scab fungus, Fusicladium Pirinum, is never found in connection with the trouble we are describing, although it may occur simultaneously with it.

Observations during the present season have established clearly that this ring around the pear is a frost effect occurring when the fruit is very young. During the past spring immense damage was caused to fruit crops all over the central and northern parts of California by late frosts, and as an aftereffect of this these ringed pears have been quite abundant. The surface tissue of the young fruit is slightly frozen just back of the petals of the flower, and such pears as are not affected severely enough to cause them to fall go on developing until they reach the condition shown in the photograph. The growth of the tissue under the frozen ring is retarded and the developing fruit becomes constricted at this point.

THE WINDS OF THE YOSEMITE VALLEY.[1]

By F. E. MATTHES, U. S. Geological Survey.

To most folks roaming about the Yosemite Valley its winds and breezes seem a matter of small interest or consequence. They come and go, now one way, now another, apparently without regularity or system—moody, capricious beyond analysis. In the midst of the grand tumult of the Yosemite landscape, our senses fairly bewildered with its many glories, we can not stop to consider these little breaths that blow about us, and let them puff by unheeded. The Yosemite region is not a windy country anyway; but once or twice in a season does a gale arise to disturb its wonted tranquillity, and its daily zephyrs are such light, airy little nothings as to scarcely seem worthy of downright study. And yet they become singularly interesting when once rightly understood. They turn out to be surprisingly systematic and withal so intimately connected with the configuration of the valley itself, that, to one who has at length mastered their secret they grow to be one of its immanent features, as characteristic and inseparable as El Capitan or the Yosemite Falls.

It happens to be so ordained in nature that the sun shall heat the ground more rapidly than the air. And so it comes that every slope or hillside basking in the morning sun soon becomes itself a source of heat. It gradually warms the air immediately over it, and the latter, becoming lighter, begins to rise. But not vertically upward, for above it is still the cool air pressing down. Up along the warm slope it ascends, much as shown by the arrows in the accompanying diagram. (Fig. 1.) Few visitors to the valley but will remember toiling up some never-ending zigzags on a hot and breathless day, with the sun on their backs and their own dust floating upward with them in an exasperating, choking cloud. Perhaps they thought it was simply their misfortune that the dust should happen to rise on that particular day. It always does on a sun-warmed slope.

But, again, memories may arise of another occasion when, on coming down a certain trail, the dust ever de-

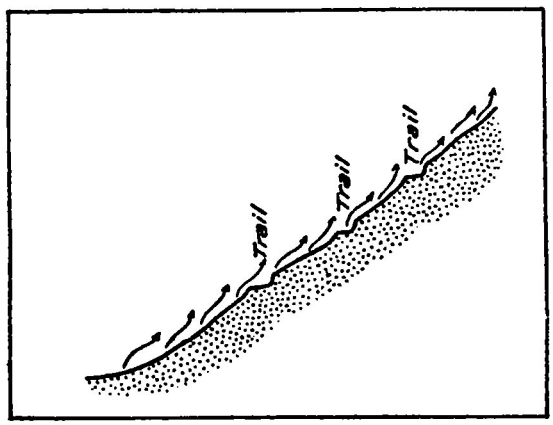


FIG. 1.

scended with the travelers, wafting down upon them from zigzag to zigzag as if with malicious pleasure. That, however, undoubtedly happened on the shady side of the valley, for there the conditions are exactly reversed. When the sun leaves a slope the latter begins at once to lose its heat by radiation, and in a short time is colder than the air. The layer next to the ground then gradually chills by contact, and, becoming heavier as it condenses, begins to creep down along the slope. (See fig. 2.) There is thus normally a warm updraft on a sunlit slope and a cold downdraft on a shaded slope—and that rule

[1] Reprinted from the Sierra Club Bulletin, Vol. VIII, No. 2, June, 1911.